

# Place-Making Attributes and Patterns of Use in the Central Campus Outdoor Plaza in the Hashemite University of Jordan

Ebtesam M. Khasawneh<sup>1</sup> & Fahed A. Khasawneh<sup>2</sup>

<sup>1</sup>Department of Architecture, Faculty of Engineering, The Hashemite University, Zarqa, Jordan

ORCID No: <https://orcid.org/0000-0002-0278-9653>

Email: [archebtesam@hu.edu.jo](mailto:archebtesam@hu.edu.jo)

<sup>2</sup>Department of Architecture, Faculty of Engineering Al al-Bayt University, Mafraq, Jordan

ORCID No: <https://orcid.org/0000-0001-8856-2152>

Email: [fahed\\_kh13@aabu.edu.jo](mailto:fahed_kh13@aabu.edu.jo)

Received	Reviewed	Revised	Published
20.08.2023	12.09.2023	21.09.2023	30.09.2023

<https://doi.org/10.61275/ISVSej-2023-10-09-09>

## Abstract

Open spaces on university campuses represent the hub of students' social life outside class hours. This study investigates the place-making quality of the central plaza on the Hashemite University campus in Jordan. It also aims to understand the use patterns and if there is a significant difference in place-making quality across students' gender, grade level, and faculty.

This research uses multiple approaches: a literature review to draw the attributes, a field survey to investigate the plaza's physical components, and a designed questionnaire to collect necessary data.

The results indicate that the plaza had high place-making quality despite its underuse. The access and linkage attribute of the plaza was high because it is found at the heart of the main movement spine on the campus. The sociability of the space was moderate; students had high levels of interaction in the plaza. Students who used the plaza were in small groups, and the most favorite activity was talking and meeting friends. Lack of privacy and shaded areas decreased the number of females who used the plaza and negatively affected its comfort and image attribute. These study findings can be used to enhance the outdoor space design on campus.

**Keywords:** Place Making Attributes, Patterns of Use, University Students, Outdoor Space, Hashemite University.

## Introduction

The traditional view of campus design is concerned more with building design as an indoor environment than the outdoor environment (open spaces), unaware of the significant role of outdoor spaces in enhancing social communication among students (Crookston, 1975; Dober, 2000). Many studies have explored the indoor environment of campus buildings (Hanan, 2013), while few studies are concerned with outdoor spaces (Hajrasouliha, 2017). Well-designed academic facilities and services, including outdoor open spaces, can create a

sense of belonging among students and enhance learning performance (Turk, Sen, and Ozyavuz, 2015).

Interactive outdoor spaces are restorative spaces (Hipp *et al.*, 2016). The possibility of social interaction, relaxation, and the presence of green areas are vital aspects of socialization that enhance space occupation (Matsuoka and Kaplan, 2008; Tourinho *et al.*, 2021).

The shift from space to the concept of place occurs when people feel a sense of belonging toward space (Carmona *et al.*, 2012). A sense of place among students can be achieved through a place-making landscape centered on university campus planning (Edwards, 2014). Outdoor space must provide safety and pleasure and be attractive and well-designed to encourage students to interact and engage in conversations (Gehl, 2001). Such spaces are an important hub for informal learning in the campus environment (Banning, 1995).

However, there is a lack of studies on place-making among students (Cox, Herrick, and Keating, 2012). Moreover, students' engagement in place-making on university campuses can enhance the educational quality and experience (Webber, Lynch, and Oluku, 2013).

This study has been conducted on the campus of Hashemite University in Jordan, specifically in the central plaza. The study objectives are:

- Examine the existence of place-making qualities and attributes in the plaza.
- Investigate whether there is a significant difference in students' ratings of place-making across gender, grade level, and faculty.
- Analyze and explore students' behaviors and use patterns inside the plaza.

This research aims to answer the following questions.

Q1: Does the central plaza have place qualities?

Q2: Is there a significant difference in place-making based on students' gender, grade level, and faculty?

Q3: What are the prevalent patterns of use in the central plaza?

## Theoretical Framework

### Place

Space and place are two constituents of our world (Tuan, 1977). Architects usually focus on space in their practice (Ching, 1979). Tuan (1977) defines space as a measurable geometric area or volume. He then clarifies that space changes to become a place when it is defined and has meaning. In agreement with the previous definition, Cresswell (2004) suggests that space is an abstract term used to measure geometric space and volume, while place entails the range of activities that human beings do, chances for them, and the meanings they give to them. Relph (1976) affirms that a place is a space experienced by people. Therefore, Casey (2000) asserts that places impact users' spirit and cognition through interpersonal interactions that occur with them. However, Rapoport (1994) claims that a place is hard to define, discouraging research on this topic.

Dayaratne (2016) asserts that environmental experience is crucial to developing a sense of place for human beings, and people use this concept to relate to their surroundings. Dovey (2010) confirms the importance of place for architects who deal with it through design. He postulates that place has an extreme force that merges social activity with perceived spatial features. Norberg-Schulz (1965) used the spirit of the place or *Genius Loci* found in a landscape to introduce an interpretation of the place based on environmental experience to architecture. Canter (1977) proposes that a place results from overlapping three components: the physical attributes, actions and behaviors of users, and conceptions related to that setting.

### Place-making

The beginning of the place-making concept was through some publications of Jacobs and Lynch in the early 1960s (PPS, 2018). After two decades, the concept developed among urban design scholars such as Whyte, Tuan, and Sim, who promoted more human-centered approaches (Salzman and Lopez, 2020). Place-making can result from the participation of the

community in open space planning; it is the bottom-up design of public spaces (Whyte, 2001). Community participation may convert a space into a meaningful place (Dovey, 1991; Johnson, Glover, and Stewart, 2014; Germen, 2015). Adopting a place-making approach through creative design can create a liveable and meaningful place with diverse activities, more social bonds among users, and strong emotional connections toward the space (Severcan, 2015).

On campus, meaningful spaces lead to memorable experiences among students (Hanan, 2013). People experience a space to create a sense of place (Habibah *et al.*, 2013; Cilliers *et al.*, 2015; Schuch and Wang, 2015), a place where users gather, interact and collect memories (Smith, Light, and Roberts, 1998; Brunnberg and Frigo, 2012). Place-making is creating a sense of identity in connection with the physical setting (Hultman and Hall, 2012; Berti, Simpson, and Clegg, 2018) and forming an image for such places (Poppe and Young, 2015). Place-making encourages a wide range of use patterns (Abu-Ghazzeh, 1999). Project for Public Spaces (PPS) suggests that place-making includes four key attributes: access and linkage, comfort and image, uses and activities, and sociability (PPS, 2018). Madden (2021) examined the role of the previous attributes in enhancing a satisfactory environment on campus outdoor spaces.

### **Place-enabling**

Dayaratne (2016) contends that place-making is mostly used to improve public spaces; therefore, there is a need for more effort to clarify the meaning, process, and ways used to ensure that places come into being. He remarks that architects can not make places, and places can be made only by the people who participate in activities happening in a space. Dayaratne (2014) concludes that the idea of place-making is misleading, and designers can only enable places to come into being or fail to do so. He suggests that place-enabling is the more suitable term to be used instead of place-making. Dayaratne (1992) advocates that the designer's role is to define a space and provide the necessary attributes and amenities to enable a space to become a place. He clarifies that when people grasp the potential of a space, use it continuously, and form meaning, it becomes a place.

### **Review of Literature**

Open space can be defined as an area of land with no buildings on it (Francis, 2003). The space where social activities are performed, such as walking, talking, and sitting in the air (Gehl, 2001). The intersection between social activities and the physical environment determines to what extent a space meets the expectations of users, especially the youth (Nguyen *et al.*, 2020). Experiencing space by users can be defined as the interaction between behavior and social-psychological processes within the physical environment (Pretty, Chipuer, and Bramston, 2003; Shamsuddin and Ujang, 2008).

A university campus is a combination of buildings interconnected by a group of open spaces (Edwards, 2014). The good connection between indoor spaces and outdoor open spaces on campus influences the sense of belonging to the learning community among students (Boyer, 1987). The superior quality of the spatial configuration of a campus comes from the smooth movement between indoor and outdoor spaces (Marcus and Francis, 1997). Interrelationships between spaces help meet users' needs (Göçer *et al.*, 2018) and provide a sense of direction (Payne, 2009). Healthy campuses contain outdoor spaces with different activities (Lau, Gou, and Liu, 2014). Usually, students use campus outdoor spaces for exercise, study, meditation, and stress relief (Addas, Maghrabi, and Goldblatt, 2021). The success of an open space design can be examined by the frequency of utility (Huang, Li, and Weng, 2017)

Eltarabily (2022) has adopted four classifications of open spaces that directly affect users according to space benefits, including social, mental, and physical health, environmental, and economic benefits. Addas *et al.* (2021) point out that diversity in open space types on campus reflects three values: first, an environmental value where green spaces play a role in providing ecosystem services such as purifying the air and cooling to reduce the air temperature. Second, an educational value when using open spaces for single or group study. Third, mental

refreshment and recreational values result from students using open spaces to spend time with friends and gather for fun and enjoyment.

On the other hand, Tourinho et al. (2021) evaluated the outdoor spaces on the campus of the Federal University of Juiz de Fora, Brazil, considering the following attributes: Proximity and accessibility, Socialization and appearance, and Existence of infrastructure. Accessible space is a visible place that is connected with its surroundings visually and can be reached physically (Carmona *et al.*, 2012). High visibility leads to high usability and liveability (Gehl, 2001). A comfortable open space promotes safety and cleanliness, enhances well-being, and provides enough seating areas and satisfying experiences (Subramanian and Jana, 2018; Weijs-Perrée, Dane, and van den Berg, 2020).

A usable and active space is a place that attracts people to visit at different times of the day and accommodates different activities such as walking, relaxing, studying, and socializing (Marcus and Francis, 1997; Dober, 2000; Hanan, 2013). Providing seating areas, greenery, shaded areas, and food services increases the space usability (Göçer *et al.*, 2019). A sociable space is a place that becomes a favorite target for people to occupy; furthermore, on campus, the outdoor spaces that promote socialization play a key role in improving quality of life (Salama, 2008).

In Jordan, several studies have been conducted on some university campuses; Alhusban et al. (2019) investigated urban design principles and explored students' satisfaction by applying these principles on campus. They confirm that students were dissatisfied with the outdoor urban spatial design and that there are no significant relationships between student demographics and satisfaction. In another study, Haddad et al. (2013) conducted a visual study of the quality of two plazas at Al al-Bayt University, focusing on three main elements of spatial capacity: visualization, orientation, and relations. They revealed that the two plazas' design and components were unsuitable for the campus climate and that the students were dissatisfied.

One of the first studies was conducted at the University of Jordan by Abu-Ghazze (1999), who assessed the design of open spaces, user perception, and use patterns. He stresses the importance of outdoor open space as a focal point in students' daily behavior. Another study has been conducted at the Jordan University of Science and Technology campus in Irbid. Al-Homoud and Abu-Obeid (2003) conducted a comparative analysis between two zones in an open campus court to measure the effect of outdoor spatial layout on students' interaction and group seclusion. They postulate that while seclusion decreased, interaction increased during pedestrian flow and *vice versa*.

## Research Methodology

This study adopts a case study approach. It also used multiple complementary methods; initially, it used a literature review to draw out place-making attributes. Then, a field survey was conducted to locate the exact position of the physical features in the plaza and to observe and understand students' behaviors and main activities. Finally, a questionnaire was formed to collect the main study data, which was analyzed using the Statistical Package of Social Sciences (SPSS) software version 25. Both descriptive statistics and inferential statistics were used. The Non-parametric Kruskal-Wallis Test was used to check for a significant difference in overall place-making quality across gender, grade level, and faculty. The field survey of the plaza was conducted by the researchers between November 2021 and April 2022 on different days of the month and different periods of the day to guarantee collecting accurate information.

The questionnaire has two sections. The first section collected the demographics of the respondents, such as gender, college degree, faculty, and grade level. Furthermore, it collected general information about users' behaviors inside the plaza: number of visits, stay time per visit, companions, and their favorite activities. The second section of the questionnaire contained the four attributes of place-making adapted from PPS (2018): Access and Linkages, Comfort and Image, Uses and Activities, and Sociability. Each attribute consists of a set of questions. The total number of questions was 50. A five-point Likert scale was used from 1, which represents strongly disagree, to 5, which represents strongly agree. The researchers distributed six hundred questionnaires -face to face- in the plaza in April 2022 over one week. Five hundred ten

questionnaires were returned with a return rate of 85%. The collected data was not normally distributed. The data was reliable; Cronbach's Alpha of overall place making was 0.929, for access and linkages was 0.782, for comfort and image was 0.784, for uses and activities was 0.818, and for sociability was 0.856 (Cronbach, 1951).

Sample demographics in Table 1 show that the respondents were divided according to gender into 315 females and 195 males. They belonged to eight faculties, and 55.9% were engineering students because their faculty building was closer to the plaza. Students' Grade levels were diverse, ranging from first year to fifth year, including all age categories of students.

**Table 1:** Student's Demographics

Source: Authors

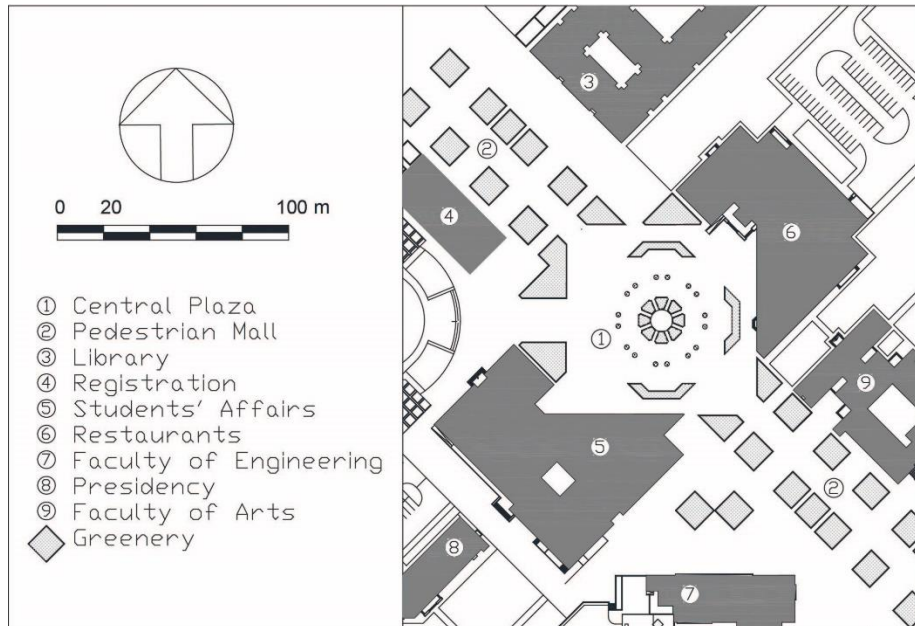
	Variables	Count	Percentage (%)
1. Gender	Male	195	38.2
	Female	315	61.8
2. College Degree	Bachelor	465	91.2
	Masters	45	8.8
3. Faculty	Engineering	285	55.9
	Nursing	15	2.9
	Physical Education and Sport Sciences	30	5.9
	Applied Medical Sciences	15	2.9
	Science	15	2.9
	Arts	90	17.6
	Natural Resources and Environment	30	5.9
	Information Technology	30	5.9
4. Grade Level	First Year	60	11.8
	Second Year	30	5.9
	Third Year	165	32.4
	Fourth Year	135	26.5
	Fifth Year	120	23.5

### The Study Area: The Central Plaza

The Hashemite University was established in 1995 on the outskirts of Zarqa City, with a total area of (35) km<sup>2</sup>. The university buildings are surrounded by a peripheral road separating them from other vacant and agricultural land. The road also feeds the car parking scattered on the outer edges. A pedestrian mall acts as the main movement spine between the campus buildings, passing through interconnected outdoor spaces and paths. This main pedestrian spine connects the northern and southern student gates and passes by the main entrances of faculty buildings. Solar panels cover the spine. The central plaza is in the middle of this spine, where this study was carried out, as shown in Figure 1.

The central plaza is surrounded by the most important service buildings of interest to students: the students' affairs building, library, restaurants, canteens, registration department, and financial affairs building. The plaza has a square shape with an area of (7000) m<sup>2</sup>. The plaza accommodates scattered green areas not exceeding 7% through raised plant boxes containing trees. The vegetation used in the plaza includes evergreen species in the plant boxes found at the centre, deciduous species at the plant boxes found at the edges of the plaza closer to the surrounding buildings, and a few palm trees scattered around the plaza. In terms of material, the floor of the plaza is paved with a mixture of stone and cement tiles, and the plant boxes are made of stone. Shading devices are not used in the plaza. The plaza's edges are not well defined, and no clear separation between the movement spine and the plaza is found. The plaza is mostly flat, with some parts having a gentle slope. As for seating, the plaza provides 15 fixed benches made of steel and wood, mainly found in front of the students' affairs building. There is a lack of comfortable seating; therefore, students use the shaded edges of plant boxes as sitting areas (Fig. 2). The plaza includes many lighting poles to guarantee enough light at

night. For safety, security personnel are continuously present in the plaza, and surveillance cameras are fixed on the surrounding buildings.



**Fig. 1:** The layout of the Central Plaza

Source: The Hashemite University, redrawn by the authors

The plaza is the main gathering place for all the students, regardless of their major, grade level, and gender. It is considered an accessible place regarding its location. Most users in this plaza are found in groups. They participate in different activities such as walking, standing, sitting under trees and on seats, using mobiles, eating, drinking, reading, and chatting with friends (Fig. 3). Sensually, because the plaza is at the center of the movement spine, users lack privacy. The geometric proportions of the plaza make it feel huge and somewhat uncomfortable in terms of human scale. Moreover, there is a need to increase the ratio of green areas relative to paved areas to create a better microclimate for users in this harsh climate.



**Fig. 2:** General view of the Central Plaza

Source: The Hashemite University, modified by the authors



**Fig. 3:** The Central Plaza in use by groups of students  
Source: Authors

## Findings and Discussion

### Central Plaza Patterns of Use

As shown in Table 2, 35.3% of the students claimed they rarely visited the plaza, indicating its underuse. Only 2.9% of the students visited the plaza 3-4 times daily. Visiting the space 1-2 times per week, amounting to 23.5%, was divided equally between males and females. This pattern of visit frequency may be due to the nature of student attendance and the university policy regarding scheduling lectures -including online lectures- within specific days, especially after the COVID-19 pandemic.

Regarding the length of stay within one visit, most respondents determined their stay time within 5-10 minutes, and this period represents the break time between the two lectures. Followed by 15-20 minutes, this interval represents the frequency of bus arrival or departure times, then 25-30 minutes stay time, which represents the time required to have a meal.

As for companions, students tend to visit the plaza in small groups, especially females. Of the respondents, 29.4% said they usually stayed in the plaza in groups of three, while only 5.9% stayed in groups of six or more. The respondents were asked to determine their favorite activities in the plaza from a given list; the list was formed depending on the previous field survey. Results showed that meeting and talking with friends has the highest scores with 70.6% of all activities, followed by eating and drinking with 50% and waiting for colleagues with 32.4%. Sleeping, watching others, and reading were the least frequent activities, with 5.9%, 5.9%, and 11.8% consecutively. Abu-Ghazzeh (1999) assured that students choose spaces far from the crowd to study.

**Table 2:** Patterns of Central Space Use

Source: The Authors

Variables		Gender	Male	Female	Total
1. Number of Visits (Staying More Than 5 Minutes)	Rarely	Count	30	150	180
		Percentage (%)	5.9%	29.4%	35.3%
	Once - Twice Per Month	Count	30	45	75
		Percentage (%)	5.9%	8.8%	14.7%
	Once - Twice Per Week	Count	60	60	120
		Percentage (%)	11.8%	11.8%	23.5%
	Once - Twice Per Day	Count	30	60	90
		Percentage (%)	5.9%	11.8%	17.6%
	Three – Four Times Per Day	Count	15	0	15
		Percentage (%)	2.9%	0.0%	2.9%

	Five and More Times Per Day	Count	30	0	30
		Percentage (%)	5.9%	0.0%	5.9%
2. Stay Time Per Visit	5 – 10 Minutes	Count	60	135	195
		Percentage (%)	11.8%	26.5%	38.2%
	15 – 20 Minutes	Count	60	105	165
		Percentage (%)	11.8%	20.6%	32.4%
	25 – 30 Minutes	Count	30	60	90
		Percentage (%)	5.9%	11.8%	17.6%
	35 – 40 Minutes	Count	0	0	0
		Percentage (%)	0	0	0
	45 – 50 Minutes	Count	0	15	15
		Percentage (%)	0.0%	2.9%	2.9%
55 – 60 Minutes	Count	0	0	0	
	Percentage (%)	0	0	0	
More than 60 Minutes	Count	45	0	45	
	Percentage (%)	8.8%	0.0%	8.8%	
3. Companions	Alone	Count	45	45	90
		Percentage (%)	8.8%	8.8%	17.6%
	One	Count	60	30	90
		Percentage (%)	11.8%	5.9%	17.6%
	Two	Count	15	135	150
		Percentage (%)	2.9%	26.5%	29.4%
	Three	Count	15	75	90
		Percentage (%)	2.9%	14.7%	17.6%
	Four	Count	30	0	30
		Percentage (%)	5.9%	0.0%	5.9%
Five	Count	0	30	30	
	Percentage (%)	0.0%	5.9%	5.9%	
Six and More	Count	30	0	30	
	Percentage (%)	5.9%	0.0%	5.9%	
4. Favorite Activity	Meet and talk with friends	Count	120	240	360
		Percentage (%)	23.5%	47.1%	70.6%
	Wait for Colleagues	Count	75	90	165
		Percentage (%)	14.7%	17.6%	32.4%
	Study and do Homework	Count	45	75	120
		Percentage (%)	8.8%	14.7%	23.5%
	Read	Count	0	60	60
		Percentage (%)	0.0%	11.8%	11.8%
	Use Mobile	Count	75	45	120
		Percentage (%)	14.7%	8.8%	23.5%
	Eat and Drink	Count	105	150	255
		Percentage (%)	20.6%	29.4%	50.0%
	Relax	Count	75	30	105
		Percentage (%)	14.7%	5.9%	20.6%
	Waste time	Count	75	30	105
		Percentage (%)	14.7%	5.9%	20.6%
	Watch others	Count	30	0	30
		Percentage (%)	5.9%	0.0%	5.9%
Contemplate	Count	60	45	105	
	Percentage (%)	11.8%	8.8%	20.6%	
Sleep	Count	15	15	30	
	Percentage (%)	2.9%	2.9%	5.9%	

### Place-Making Quality of the Central Plaza

Overall place-making quality of the central plaza was rated high, with a mean of 3.40 (Table 3). Place-making attributes, access and linkages were rated high, with a mean of 3.69. It



was easy to enter the plaza since it is found at the heart of the main pedestrian movement spine, but this made the edges of the plaza less defined. Furthermore, the high visibility of the various parts of the plaza lowered privacy levels. All other place-making attributes were rated moderate; sociability came first with 3.38, comfort and image with 3.37, and uses and activities with 3.17.

In terms of sociability, the central plaza is underused by the students, but its design facilitates interactions in line with the previous research (Rakhashandehroo *et al.*, 2015). Nevertheless, many students do not consider it their favorite campus space and possess a less sense of belonging. As for comfort and image, the students confirmed that the central plaza gives a good first impression to its visitors due to its cleanliness, safety, and welcoming nature; this result agrees with previous studies (Banning, 1995; Subramanian and Jana, 2018; Weijs-Perrée, Dane and van den Berg, 2020). However, the ratio of female to male users is still unbalanced in the plaza. More male users are prevalent, possibly due to the lack of privacy and shaded areas, which drives female users away. According to Altman (1975), privacy perception in public spaces is affected by gender. Whyte (2001) has also pointed out that males prefer sitting by the edges while females isolate themselves.

In terms of the attribute 'uses and activities', it can be seen that many different types of activities were happening simultaneously in the plaza. Nevertheless, many students claimed that they have nothing interesting to do here. The results also indicate the need for introducing a better variety of furniture types to enable more activities, corroborating previous studies (Gehl, 2001; O'Rourke and Baldwin, 2016). For example, providing tables with chairs and shading devices can encourage more group activities such as studying and collaboration. Many students also felt that the noise level was unacceptable, which can discourage some activities requiring lower noise levels, such as relaxing and contemplation.

**Table 3:** Overall Place-making and Its Subscale Means

Source: The Authors

Place Making Subscales		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Standard deviation
<b>Access and Linkages</b>							3.69	0.465
1. I can easily get to the plaza	N	0	15	75	255	165	4.12	0.759
	%	0	2.9	14.7	50.0	32.4		
2. It is easy to enter the space	N	0	0	90	285	135	4.09	0.659
	%	0	0	17.6	55.9	26.5		
3. It is easy to navigate through the space	N	0	0	135	300	75	3.88	0.631
	%	0	0	26.5	58.8	14.7		
4. The space is visually linked with surrounding	N	15	45	135	210	105	3.68	0.993
	%	2.9	8.8	26.5	41.2	20.6		
5. I Can see the space from a distance	N	15	60	150	210	75	3.53	0.978
	%	2.9	11.8	29.4	41.2	14.7		
6. The interior of the space is visible from the outside	N	0	120	195	135	60	3.26	0.950
	%	0	23.5	38.2	26.5	11.8		
7. The surrounding discourages users from entering the space	N	30	255	60	135	30	3.62	1.030
	%	5.9	50.0	11.8	26.5	5.9		
8. The occupants of adjacent buildings use the space	N	0	90	135	165	120	4.00	0.728
	%	0	17.6	26.5	32.4	23.5		
9. Students can easily walk from and to this space	N	0	15	90	285	120	3.94	0.726
	%	0	2.9	17.6	55.9	23.5		
10. Sidewalks lead to and from the adjacent areas	N	0	15	105	285	105	3.35	0.968
	%	0	2.9	20.6	55.9	20.6		
	N	15	75	195	165	60	3.68	0.931

11. The space functions well for people with disabilities and other special needs	%	2.9	14.7	38.2	32.4	11.8		
12. The paths throughout the space take people where they want to go	N	15	45	105	270	75	3.53	0.883
	%	2.9	8.8	20.6	52.9	14.7		
13. The edge of the space is well-defined	N	0	75	150	225	60	3.24	1.087
	%	0	14.7	29.4	44.1	11.8		
<b>Comfort and Image</b>							3.33	0.527
14. This space is comfortable	N	15	45	180	225	45	3.47	0.883
	%	2.9	8.8	35.3	44.1	8.8		
15. The space is inviting	N	0	60	120	270	60	3.65	0.837
	%	0	11.8	23.5	52.9	11.8		
16. I feel safe here	N	15	90	90	225	90	3.56	1.064
	%	2.9	17.6	17.6	44.1	17.6		
17. The place makes a good first impression	N	0	45	165	255	45	3.59	0.772
	%	0	8.8	32.4	50.0	8.8		
18. There is as many females as males	N	135	150	105	105	15	2.44	1.169
	%	26.5	29.4	20.6	20.6	2.9		
19. There are enough places to sit	N	90	120	150	105	45	2.79	1.209
	%	17.6	23.5	29.4	20.6	8.8		
20. Seats are conveniently located	N	60	165	135	105	45	2.82	1.151
	%	11.8	32.4	26.5	20.5	8.8		
21. The students have a choice of places to sit, either in the sun or shade	N	30	75	120	210	75	3.44	1.091
	%	5.9	14.7	23.5	41.2	14.7		
22. The space is clean and free of litter	N	0	45	60	270	135	3.97	0.858
	%	0	8.8	11.8	52.9	26.5		
23. There are security personnel present all the times	N	15	120	195	120	60	3.18	1.015
	%	2.9	23.5	38.2	23.5	11.8		
24. The students are always taking pictures of the space	N	15	75	120	270	30	3.44	0.915
	%	2.9	14.7	23.5	52.9	5.9		
25. There are many photo opportunities available in the space	N	0	75	135	255	45	3.53	0.849
	%	0	14.7	26.5	50.0	8.8		
26. Vehicles prevent students from easily getting to the space	N	45	255	75	120	15	3.38	1.030
	%	8.8	50.0	14.7	23.5	2.9		
<b>Uses and Activities</b>							3.17	0.583
27. I always Have something to do here	N	45	120	165	165	15	2.97	1.015
	%	8.8	23.5	32.4	32.4	2.9		
28. I like to come again and again to this place	N	45	75	210	135	45	3.12	1.052
	%	8.8	14.7	41.2	26.5	8.8		
29. There is nothing interesting to do here	N	15	120	165	135	75	3.65	0.801
	%	2.9	23.5	32.4	26.5	14.7		
30. I can see many users engaged in a wide range of activities here	N	15	0	195	240	60	3.53	0.849
	%	2.9	0	38.2	47.1	11.8		
31. This place attracts a variety of users (students, faculty...etc.) at	N	0	60	180	210	60	3.44	0.946
	%	0	11.8	35.3	41.2	11.8		

different times of the day.								
32. Many different types of activities are occurring at one time	N	30	15	225	180	60	3.65	0.837
	%	5.9	2.9	44.1	35.3	11.8		
33. Most parts of this space are always occupied	N	0	30	210	180	90	3.18	1.098
	%	0	5.9	41.2	35.3	17.6		
34. I can relax and contemplate here	N	60	60	150	210	30	2.76	1.114
	%	11.8	11.8	29.4	41.2	5.9		
35. I can focus to study or read a book here	N	75	150	120	150	15	3.03	0.892
	%	14.7	29.4	23.5	29.4	2.9		
36. The noise level in this space is acceptable	N	30	105	195	180	0	2.76	1.032
	%	5.9	20.6	38.2	35.3	0		
37. The furniture provided here enables me to do many activities	N	60	165	120	165	0	2.74	1.067
	%	11.8	32.4	23.5	32.4	0		
<b>Sociability</b>							3.38	0.555
38. This space is my favorite spot in campus to meet friends	N	60	105	180	135	30	2.94	1.084
	%	11.8	20.6	35.3	26.5	5.9		
39. I feel comfortable interacting with strangers here	N	15	105	225	120	45	3.15	0.944
	%	2.9	20.6	44.1	23.5	8.8		
40. The users are mostly found in groups here	N	0	30	210	195	75	3.62	0.806
	%	0	5.9	41.2	38.2	14.7		
41. The users always talk with one another in this space	N	0	0	90	330	90	4.00	0.595
	%	0	0	17.6	64.7	17.6		
42. The Users in this space talk to people in other groups frequently	N	30	75	225	150	30	3.15	0.944
	%	5.9	14.7	44.1	29.4	5.9		
43. Students seem to know each other by face or by name here	N	15	30	180	225	60	3.56	0.882
	%	2.9	5.9	35.3	44.1	11.8		
44. The students bring their friends and relatives to see this place	N	30	30	240	150	60	3.35	0.968
	%	5.9	5.9	47.1	29.4	11.8		
45. Mostly, users in this space point to its features with pride	N	45	75	240	120	30	3.03	0.986
	%	8.8	14.7	47.1	23.5	5.9		
46. The students are always smiling while being here	N	30	75	195	180	30	3.21	0.964
	%	5.9	14.7	38.2	35.3	5.9		
47. The students make regular eye contact with each other here	N	15	30	195	225	45	3.50	0.850
	%	2.9	5.9	38.2	44.1	8.8		
48. Many students use this place frequently	N	0	15	150	240	105	3.85	0.773
	%	0	2.9	29.4	47.1	20.6		
49. Users mix of gender and academic disciplines generally reflect the university community at large	N	15	15	195	180	105	3.68	0.931
	%	2.9	2.9	38.2	35.3	20.6		
	N	30	210	120	105	45	2.85	1.089

50. The users tend to pick up litter when they see it while being in this space	%	5.9	41.2	23.5	20.6	8.8		
<b>Overall Place Making</b>		Weighted Mean				3.40		
		Standard Deviation				0.446		

### Differences in Place-making Quality

Non-parametric Kruskal-Wallis test was used to find if there exists a statistically significant difference in the overall place-making score of the central plaza across the student's gender, grade level, and faculty. In terms of gender, as in Table 4, the Kruskal-Wallis test confirmed a statistically significant difference in the overall place-making across genders ( $H(1)=54.597$ ,  $p=0.000$ ), with a mean rank of 316.65 for males and 217.64 for females.

For grade level, as in Table 5, the Kruskal-Wallis test confirmed a statistically significant difference in overall place-making across five grade levels ( $H(4)=40.882$ ,  $p=0.000$ ), with a mean rank of 173.00 for the first year, 225.50 for the second year, 288.91 for the third year, 287.17 for the fourth year and 222.69 for the fifth year. This result corresponds with Pyron (1972), who claims that the users' familiarity with space enhances their experiences and sense of place.

As for faculty, as in Table 6, the Kruskal-Wallis test confirmed a statistically significant difference in overall place-making across eight faculties ( $H(7)=135.615$ ,  $p=0.000$ ), with a mean rank of 230.63 for Engineering, 458.00 for Nursing, 285.50 for Physical Education and Sport Sciences, 83.00 for Applied Medical Sciences, 326.75 for Arts, 278.00 for Science, 98.00 for Natural Resources and Environment and 379.25 for Information Technology.

**Table 4:** Kruskal-Wallis Test for Overall Place-making across Gender  
Source: Authors

Overall Place Making		Gender	N	Mean Rank	Median	Mean
<b>Percentiles</b>		Male	195	316.65	3.46	3.57
25th	3.06					
50th (Median)	3.30					
75th	3.80					
<b>Test Statistics</b>		Female	315	217.64	3.12	3.29
Kruskal-Wallis H	54.597					
Df	1					
Asymp. Sig.	0.000					
<b>Total</b>			510	--	3.30	3.40

**Table 5:** Kruskal-Wallis Test for Overall Place-making Across Grade Level  
Source: The Authors

Overall Place Making		Grade Level	N	Mean Rank	Median	Mean
<b>Percentiles</b>		First Year	60	173.00	3.06	3.19
25th	3.06					
50th (Median)	3.30					
75th	3.80	Second Year	30	225.50	3.24	3.24
<b>Test Statistics</b>						
Kruskal-Wallis H	40.882	Third Year	165	288.91	3.58	3.47
Df	4	Fourth Year	135	287.17	3.42	3.54
Asymp. Sig.	0.000	Fifth Year	120	222.69	3.23	3.29
<b>Total</b>			510	--	3.30	3.40

**Table 6:** Kruskal-Wallis Test for Overall Place-making Across Faculty

Source: Authors

Overall Place Making		Faculty	N	Mean Rank	Median	Mean
<b>Percentiles</b>		Engineering	285	230.63	3.26	3.33
25th	3.06	Nursing	15	458.00	3.94	3.94
50th (Median)	3.30	Physical Education and Sport Sciences	30	285.50	3.37	3.37
75th	3.80	Applied Medical Sciences	15	83.00	3.02	3.02
<b>Test Statistics</b>		Arts	90	326.75	3.86	3.64
Kruskal-Wallis H	135.615	Science	15	278.00	3.36	3.36
Df	7	Natural Resources and Environment	30	98.00	3.03	3.03
Asymp. Sig.	0.000	Information Technology	30	379.25	3.67	3.67
<b>Total</b>			510	--	3.30	3.40

## Conclusions

The central plaza at Hashemite University was found to have a good place-making quality despite its under-use by the students. The plaza had a high level of access and linkages because it is at the core of the pedestrian mall, forming the main movement spine across the campus. The plaza had moderate sociability; it is one of the main outdoor spaces where many interactions happen. In terms of comfort and image, the plaza gives a good first impression because of its cleanliness and safety. However, more must be done to encourage more females to use the plaza by creating a hierarchy of privacy levels and more shaded areas.

In terms of use and activities, many types of activities are conducted in the plaza, but more furniture alternatives can further enhance the diversity and quality of such activities.

As for patterns of use, most students, especially females, rarely use the plaza. Those who used the plaza were mostly in small groups. Most favorite activities were meeting and talking with friends, eating, drinking, and waiting for colleagues. The plaza needs drastic changes to its design to increase its usability by the students. Levels can be introduced to define its different parts and separate it clearly from the movement spine. More greenery can enhance privacy and create a cooler microclimate in this harsh area. Shading devices and different types of furniture, such as tables with seats, can encourage females to use the plaza more and create a variety of group-based activities. Moreover, it was found that place-making quality ratings differed statistically significantly between the students across gender, grade level, and faculty.

This study has its limitations. It focused only on the students, while staff and faculty use of outdoor space was not considered. This study also did not use behavioral mapping. Future studies can use behavioral mapping to confirm the results of this study, especially those related to actual space use.

This study demonstrated the importance of campus outdoor space design by evaluating place attributes. Due to its place-making quality, the central plaza was a sociable place. It performed as an interaction hub for students from different disciplines. In the long run, such interaction can create a better sense of belonging and community among the students on campus.

## References

- Abu-Ghazze, T.M. (1999) 'Communicating behavioral research to campus design: Factors affecting the perception and use of outdoor spaces at the University of Jordan', *Environment and Behavior*, 31(6), pp. 764–804.
- Addas, A., Maghrabi, A. & Goldblatt, R. (2021) 'Public open spaces evaluation using importance-performance analysis (IPA) in Saudi Universities: the case of King Abdulaziz University, Jeddah', *Sustainability*, 13(2), pp. 915.
- Al-Homoud, M. & Abu-Obeid, N. (2003) 'University Outdoor Spatial Layout Effect on Perception of Students' Interaction and Group Seclusion', *Journal of Architectural and Planning Research*, 20(3), pp. 221–233.

- Alhusban, A.A., Alhusban, S.A. & Al-Betawi, Y.N. (2019) 'The degree of the Hashemite university students' desires, needs, and satisfaction with their campus urban design', *Journal of Place Management and Development*, 12(3), pp. 408–448.
- Altman, I. (1975) 'The Environment and Social Behavior: Privacy, Personal Space, Territory, and Crowding.' Available at: <https://eric.ed.gov/?id=ed131515> (Accessed: 10 July 2023).
- Banning, J.H. (1995) 'Where do I sit? The landscape of informal learning', *Campus Ecologist*, 13(4). pp. 1-5.
- Berti, M., Simpson, A.V. & Clegg, S.R. (2018) 'Making a place out of space: The social imaginaries and realities of a Business School as a designed space', *Management Learning*, 49(2), pp. 168–186. Available at: <https://doi.org/10.1177/1350507617737453>.
- Boyer, E.L. (1987) *College: The Undergraduate Experience in America*. First Edition. New York: Harper and Row Publishers.
- Brunnberg, L. & Frigo, A. (2012) 'Placemaking in the 21st-century city: introducing the funfair metaphor for mobile media in the future urban space', *Digital Creativity*, 23(2), pp. 113–125. Available at: <https://doi.org/10.1080/14626268.2012.709943>.
- Canter, D.V. (1977) *The psychology of place*. London: Architectural Press.
- Carmona, M. et al. (2012) *Public Places - Urban Spaces*. New York: Routledge.
- Casey, E.S. (2000) *Remembering: A Phenomenological Study*. Second Edition. Bloomington: Indiana University Press.
- Ching, F.D.K. (1979) *Architecture: Form, Space and Order*. First Edition. New York: John Wiley & Sons, Incorporated.
- Cilliers, E.J. et al. (2015) 'Green place-making in practice: from temporary spaces to permanent places', *Journal of Urban Design*, 20(3), pp. 349–366.
- Cox, A., Herrick, T. & Keating, P. (2012) 'Accommodations: staff identity and university space', *Teaching in Higher Education*, 17(6), pp. 697–709. Available at: <https://doi.org/10.1080/13562517.2012.658554>.
- Cresswell, T. (2004) *Place: A Short Introduction*. 1st Edition. Malden, MA: Wiley-Blackwell.
- Cronbach, L.J. (1951) 'Coefficient alpha and the internal structure of tests', *Psychometrika*, 16, pp. 297–334. Available at: <https://doi.org/10.1007/BF02310555>.
- Crookston, B.B. (1975) 'Milieu management', *NASPA Journal*, 13(1), pp. 45–55.
- Dayaratne, R. (1992) *Supporting people's placemaking: theory and practice*. Unpublished Ph.D. Thesis, University of Newcastle upon Tyne, UK.
- Dayaratne, R. (2014) *Towards regenerating urban places: A phenomenological approach to understanding people-place relations in cities*, keynote speech at the Asia Pacific Conference on Environment-Behaviour Studies, AcE-Bs 2014, Chung-Ang University, South Korea.
- Dayaratne, R. (2016) 'Creating places through participatory design: psychological techniques to understand people's conceptions', *Journal of Housing and the Built Environment*, 31(4), pp. 719–741. Available at: <https://doi.org/10.1007/s10901-016-9497-2>.
- Dober, R.P. (2000) *Campus Landscape: Functions, forms, features*. John Wiley & Sons.
- Dovey, K. (1991) 'Melbourne Docklands and the sense of place', *Picking Winners: Melbourne's Urban Development Game: A Case Study in Planning*, Melbourne's Docklands [Preprint].
- Dovey, K. (2010) *Becoming Places: Urbanism / Architecture / Identity / Power*. 1st Edition. New York: Routledge.
- Edwards, B. (2014) *University Architecture*. New York: Taylor & Francis.
- Eltarabily, S. (2022) 'Toward A Conceptual Framework for Evaluating the Quality of Urban Open Spaces', *Journal of Sustainable Architecture & Civil Engineering*, 31(2). pp. 58-84.
- Francis, M. (2003) *Urban open space: Designing for user needs*. Washington, DC: Island Press.
- Gehl, J. (2001) *Life between buildings: using public space*. Copenhagen: The Danish Architectural Press.

- Germen, M. (2015) 'Istanbul Gezi Park Resistance movement as public engagement in the making of place', *Procedia-Social and Behavioral Sciences*, 184, pp. 13–21.
- Göçer, Ö., et al. (2018) 'Introduction of a spatio-temporal mapping based POE method for outdoor spaces: Suburban university campus as a case study', *Building and Environment*, 145, pp. 125–139.
- Göçer, Ö., et al. (2019) 'Pedestrian tracking in outdoor spaces of a suburban university campus for the investigation of occupancy patterns', *Sustainable cities and society*, 45, pp. 131–142.
- Habibah, A. et al. (2013) 'Place-making of ecotourism in Tasik Chini: From exploratory to the contemporary biosphere reserve', *Asian Social Science*, 9(6), pp. 84.
- Haddad, M. et al. (2013) 'Investigating the Quality of Open Educational Spaces: The Case of Al-Bayt University Al-Mafraq/Jordan', *Research Journal of Applied Sciences, Engineering, and Technology*, 5, pp. 1075–1085. Available at: <https://doi.org/10.19026/rjaset.5.4821>.
- Hajrasouliha, A. (2017) 'Campus score: Measuring university campus qualities', *Landscape and Urban Planning*, 158, pp. 166–176.
- Hanan, H. (2013) 'Open space as meaningful place for students in ITB campus', *Procedia-Social and Behavioral Sciences*, 85, pp. 308–317.
- Hipp, J.A. et al. (2016) 'The relationship between perceived greenness and perceived restorativeness of university campuses and student-reported quality of life', *Environment and Behavior*, 48(10), pp. 1292–1308.
- Huang, Y., Li, B.R. & Weng, S.F. (2017) 'Study on Landscape Image of Campus in Guangzhou [J]', *Chinese Landscape Architecture*, 33(01), pp. 88–94.
- Hultman, J. and Hall, C.M. (2012) 'Tourism place-making: Governance of locality in Sweden', *Annals of Tourism Research*, 39(2), pp. 547–570.
- Johnson, A.J., Glover, T.D. & Stewart, W.P. (2014) 'Attracting locals downtown: Everyday leisure as a place-making initiative', *Journal of Park and Recreation Administration*, 32(2), pp. 28–42.
- Lau, S.S.Y., Gou, Z. & Liu, Y. (2014) 'Healthy campus by open space design: Approaches and guidelines', *Frontiers of Architectural Research*, 3(4), pp. 452–467. Available at: <https://doi.org/10.1016/j.foar.2014.06.006>.
- Madden, K. (2021) *How to Turn a Place Around: A Placemaking Handbook*. New York, NY: Project for Public Spaces, Inc.
- Marcus, C.C. & Francis, C. (eds) (1997) *People Places: Design Guidelines for Urban Open Space*, 2nd Edition. New York: John Wiley and Sons.
- Matsuoka, R.H. & Kaplan, R. (2008) 'People needs in the urban landscape: analysis of landscape and urban planning contributions', *Landscape and urban planning*, 84(1), pp. 7–19.
- Nguyen, Q.M. et al. (2020) 'Identifying and assessing the attractiveness of public spaces for the youth as a key factor to help establish social sustainability—case studies from Hanoi', in *ICSCSA 2019: Proceedings of the International Conference on Sustainable Civil Engineering and Architecture*. Springer, pp. 159–173.
- Norberg-Schulz, C. (1965) *Intentions in Architecture*. First Edition. Cambridge, MA: MIT Press.
- O'Rourke, V. & Baldwin, C. (2016) 'Student engagement in placemaking at an Australian university campus', *Australian Planner*, 53, pp. 1–14. Available at: <https://doi.org/10.1080/07293682.2015.1135810>.
- Payne, S. (2009) 'Open Space: People Space', *Journal of Environmental Psychology*, 29(4), pp. 532–533. Available at: <https://doi.org/10.1016/j.jenvp.2009.10.007>.
- Poppe, W. & Young, D. (2015) 'The politics of place: place-making versus densification in Toronto's tower neighbourhoods', *International Journal of Urban and Regional Research*, 39(3), pp. 613–621.
- PPS (2018) *Placemaking: What if We Built Our Cities Around Places*. New York, USA: Project for Public Spaces, Inc., p. 24. Available at:

- <https://www.pps.org/product/placemaking-what-if-we-built-our-cities-around-places> (Accessed: 29 July 2023).
- Pretty, G.H., Chipuer, H.M. & Bramston, P. (2003) 'Sense of place amongst adolescents and adults in two rural Australian towns: The discriminating features of place attachment, sense of community and place dependence in relation to place identity', *Journal of Environmental Psychology*, 23(3), pp. 273–287. Available at: [https://doi.org/10.1016/S0272-4944\(02\)00079-8](https://doi.org/10.1016/S0272-4944(02)00079-8).
- Pyron, B. (1972) 'Form and Diversity in Human Habitats: Judgmental and Attitude Responses', *Environment and Behavior*, 4(1), pp. 87–120. Available at: <https://doi.org/10.1177/001391657200400104>.
- Rakhashandehroo, M. et al. (2015) 'The social benefits of urban open green spaces: A literature review *Management research and practice*, Vol. 7, Issue 4, pp. 60-71.
- Rapoport, A. (1994) 'A critical look at the concept "place."', *National Geographic Journal of India*, 40(1–2), pp. 31–45.
- Relph, E.C. (1976) *Place and Placelessness*. London: Pion Ltd.
- Salama, A.M. (2008) 'When good design intentions do not meet users expectations: Exploring Qatar University campus outdoor spaces', *ArchNet-IJAR: International Journal of Architectural Research*, 2(2), pp. 57–77.
- Salzman, R. & Lopez, J. (2020) 'Toward understanding the prevalence and purpose of placemaking among community development institutions in the United States', *Community Development*, 51(4), pp. 387–400.
- Schuch, J.C. & Wang, Q. (2015) 'Immigrant businesses, place-making, and community development: a case from an emerging immigrant gateway', *Journal of Cultural Geography*, 32(2), pp. 214–241.
- Severcan, Y.C. (2015) 'The Effects of Children's Participation in Planning and Design Activities on Their Place Attachment', *Journal of Architectural and Planning Research*, 32(4), pp. 271–293.
- Shamsuddin, S. & Ujang, N. (2008) 'Making places: The role of attachment in creating the sense of place for traditional streets in Malaysia', *Habitat International*, 32, pp. 399–409. Available at: <https://doi.org/10.1016/j.habitatint.2008.01.004>.
- Smith, J.M., Light, A. & Roberts, D. (1998) Introduction: Philosophies and geographies of place, In Light, A. and Smith, J.M. (Eds.), *Philosophy and geography III: Philosophies of place*, pp. 1-13. Lanham, MD: Rowman & Littlefield.
- Subramanian, D. & Jana, A. (2018) 'Assessing urban recreational open spaces for the elderly: A case of three Indian cities', *Urban Forestry & Urban Greening*, 35, pp. 115–128.
- Tourinho, A.C.C., et al. (2021) 'Post-occupancy evaluation of outdoor spaces on the campus of the Federal University of Juiz de Fora, Brazil', *Archnet-IJAR: International Journal of Architectural Research*, 15(3), pp. 617–633.
- Tuan, Y.-F. (1977) *Space and Place: The Perspective of Experience*. Minneapolis: University of Minnesota Press.
- Turk, Y.A., Sen, B. & Ozyavuz, A. (2015) 'Students exploration on campus legibility', *Procedia-Social and Behavioral Sciences*, 197, pp. 339–347.
- Webber, M., Lynch, S. & Oluku, J. (2013) 'Enhancing student engagement in student experience surveys: a mixed methods study', *Educational Research*, 55(1), pp. 71–86. Available at: <https://doi.org/10.1080/00131881.2013.767026>.
- Weijs-Perrée, M., Dane, G. & Van den Berg, P. (2020) 'Analyzing the relationships between citizens' emotions and their momentary satisfaction in urban public spaces', *Sustainability*, 12(19), pp. 7921-7941.
- Whyte, W.H. (2001) *The Social Life of Small Urban Spaces*. 8th ed. edition. New York, NY: Project for Public Spaces.